MONTHLY WEATHER REVIEW.

Editor: Prof. CLEVELAND ABBE.

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INTRODUCTION.

The REVIEW for June, 1895, is based on reports from 3,249 stations occupied by regular and voluntary observers. These reports are classified as follows: 149 reports from Weather Bureau stations; 35 reports from U. S. Army post surgeons; 2,380 monthly reports from State Weather Service and voluntary observers; 31 reports from Canadian stations; 96 reports through the Southern Pacific Railway Company; 528 marine reports through the cooperation of the Hydrographic Office, Navy Department, and New York Herald Weather Service; weekly or monthly reports from 30 U. S. Life-Saving stations; monthly reports from local services established in all States and Territories; and international simultaneous observations. Trustworthy newspaper extracts and special reports have also been used.

The WEATHER REVIEW is prepared under the general editorial supervision of Prof. Cleveland Abbe. Unless otherwise specifically noted, the text is written by the Editor, but the statistical tables are furnished by the Division of Records and Meteorological Data, in charge of Mr. A. J. Henry, chief of that division.

CLIMATOLOGY OF THE MONTH.

GENERAL CHARACTERISTICS.

During the month of June the pressure was in excess throughout the greater part of the United States; the amount of clear sky during the daytime was above the average; the average temperature of the month was deficient throughout the Rocky Mountain slope and plateau region, but in excess east of the Mississippi; the maximum temperatures that occurred during the month were the highest on record for June at numerous stations in the Mississippi Valley and the Atlantic coast region; the rainfall was above the normal in the Gulf States, the northern slope and North Dakota, the middle and southern slope, but was below the normal in all other regions; the accumulated departures from normal precipitation showed a decided drought in the Ohio Valley, Lake region, and upper Mississippi Valley; the Ohio River and tributaries were at a very low stage of water.

ATMOSPHERIC PRESSURE.

The distribution of mean atmospheric pressure reduced to sea level, as shown by mercurial barometers not reduced to standard gravity and as determined from observations taken daily at 8 a. m. and 8 p. m. (seventy-fifth meridian time), is shown by isobars on Chart II. That portion of the reduction to standard gravity that depends on latitude is shown by the numbers printed on the right-hand border.

The *mean pressures* during the current month were highest in Washington and Oregon and high on the coasts of Nova Scotia and the south Atlantic States. The highest were: Tatoosh Island and Fort Canby, 30.18; Seattle, 30.12; Port Angeles and Portland, Oreg., 30.14. Mean pressures were lowest in Arizona and Saskatchewan. The lowest were: Yuma, 29.78; Tucson, 29.82; Fresno, 29.85; El Paso, 29.88; and Battleford, 29.89.

As compared with the normal for June, the mean pressure for the current month was in excess over the whole country, except central California and Yuma. The greatest excesses were: Tatoosh Island, 0.18; Denver, 0.16; Father Point, Halifax, Eastport, Helena, Port Angeles, and Astoria, 0.15.

As compared with the preceding month of May, the pressures, reduced to sea level, show a fall in Pennsylvania, Virginia, North and South Carolina, Georgia, Kentucky, Tennessee, Ohio, and Indiana, and a rise over the rest of the country. The maximum rises were: Tatoosh Island, 0.18; Fort Canby, 0.16; Boston, 0.14. The greatest fall was 0.08, at Knoxville and Raleigh.

AREAS OF HIGH AND LOW PRESSURE.

By Prof. H. A. HAZEN; dated September 12, 1895.

The paths of the centers of high pressure are shown on Chart IV. The maximum pressure at the center is given within the circle for each date. There have been very few well-defined high areas during the month. Generally there has been great stagnation in the atmosphere. High areas have appeared for a few days, remained almost stationary, and then disappeared.

The most remarkable of these was High number III, which appeared in Idaho on the evening of the 17th. It moved a little south of east to Nebraska, then northeast to the north of Lake Superior.

On the morning of the 20th it turned and moved due south to the Gulf of Mexico, and then moved due east till it disappeared in Cuba on the morning of the 25th. This was a very remarkable course for a high area to pursue at this season of the year, but the maps very plainly indicate such a course.

AREAS OF LOW PRESSURE.

The tracks of all the low areas that could be definitely located are given on Chart I. A small circle gives the location of the center each morning and evening, and the date with lowest pressure is also given. The accompanying table gives the same data as for the high areas. The most interesting point about the lows for the current month is their general northward trend and their avoidance of the Gulf and Atlantic States. This behavior of these lows partly accounts for the most remarkable drought in Indiana and bordering States.

MOVEMENT OF CENTERS.

The following table shows the date and location of the center for the beginning and ending of each area of high or low pressure that has appeared on the U. S. weather maps during the month, together with the average daily and hourly velocities. The monthly averages are computed in two ways; first, by considering each path as a unit, and second, by giving equal weight to each day of observation:

Movement of centers of areas of high and low pressure.

Number.	First observed.			Last observed.			Path.		Average velocities.	
	Date.	Lat. N.	Long. W.	Date.	Lat. N.	Long W.	Length.	Duration.	Daily.	Hourly.
High areas.		°	°		°	°	*Miles.*	*Days.*	*Miles.*	*Miles.*
I	3, a.m.	47	118	8, p.m.	47	66	3,180	5.5	578	24.1
II	6, p.m.	47	121	10, p.m.	49	91	2,560	4.0	640	26.7
III	17, p.m.	42	113	25, a.m.	23	82	4,390	7.5	585	24.4
IV	23, a.m.	44	125	30, p.m.	47	87	4,428	7.5	590	24.6
Sums							14,558	24.5	2,393	
Mean of 4 paths									598	24.9
Mean of 24.5 days									594	24.8
Low areas.										
I	1, a.m.	33	109	6, p.m.	47	65	2,730	5.5	496	20.7
II	4, p.m.	52	114	7, p.m.	49	91	1,218	3.0	406	16.9
III	7, p.m.	39	105	9, p.m.	38	92	1,194	2.0	597	24.9
IV	20, p.m.	52	113	27, p.m.	47	76	2,538	7.0	363	15.1
Sums							7,880	17.5	1,862	
Mean of 4 paths									465	19.4
Mean of 17.5 days									450	18.7

NORTH ATLANTIC METEOROLOGY.

Fog.—The limits of fog belts west of the fortieth meridian, as reported by shipmasters, are shown on Chart I by dotted shading.

East of the fifty-fifth meridian fog was reported on 22 dates; between the fifty-fifth and sixty-fifth meridians on 20 dates, and west of the sixty-fifth meridian on 22 dates. Compared with the corresponding month of the last seven years, the dates of occurrence of fog east of the fifty-fifth meridian numbered 11 more than the average; between the fifty-fifth and sixty-fifth meridians, 7 more than the average; and west of the sixty-fifth meridian, 7 more than the average. Fog was noted on every day of the month, except the 3d, 17th, and 18th.

OCEAN ICE FOR JUNE.

The following table shows the southern and eastern limits of the regions within which icebergs or field ice were reported for June during the last thirteen years:

Southern limit.			Eastern limit.		
Month.	Lat. N.	Long. W.	Month.	Lat. N.	Long. W.
	° ′	° ′		° ′	° ′
June, 1883	40 28	51 45	June, 1883	48 14	42 43
June, 1884	41 42	47 49	June, 1884	44 00	45 23
June, 1885	39 38	48 12	June, 1885	45 14	41 12
June, 1886	40 30	53 00	June, 1886	49 15	40 00
June, 1887	40 40	48 34	June, 1887	43 22	39 19
June, 1888	43 38	43 24	June, 1888	43 38	43 24
June, 1889	42 54	49 54	June, 1889	46 57	40 29
June, 1890	40 01	52 00	June, 1890*	46 08	37 07
June, 1891	40 15	50 24	June, 1891	44 15	43 47
June, 1892	41 44	50 40	June, 1892	45 50	40 46
June, 1893	42 08	53 19	June, 1893	47 20	44 19
June, 1894	40 10	57 30	June, 1894	49 20	36 30
June, 1895	41 08	51 10	June, 1895	50 30	42 51
Mean	41 09	50 35	Mean	46 28	41 21

*On the 10th a small block of ice was reported in N. 46° 28′, W. 38° 34′.

The limits of the region within which icebergs or field ice were reported for June, 1895, are shown on Chart I by crosses. The southernmost ice reported, a berg 200 feet long by 50 feet high, observed on the 10th in the position given, was about the normal southern limit, and the easternmost ice reported, a berg observed on the 18th, in the position given, was about one-half of a degree west of the normal eastern limit of ice for June.

TEMPERATURE OF THE AIR.

The mean temperature only is given for each station in Table II, for voluntary observers, but in Table I, both the mean temperatures and the departures from the normal are given for the current month for all the regular stations of the Weather Bureau.

The *monthly mean temperature* published in Table I, for the regular stations of the Weather Bureau, is the simple mean of all the daily maxima and minima; for voluntary stations a variety of methods of computation is necessarily allowed, as shown by the notes appended to Table II.

The distribution of the monthly mean temperature of the air over the United States and Canada is shown by the dotted isotherms on Chart II; the lines are drawn over the high irregular surface of the Rocky Mountain plateau, although the temperatures have not been reduced to sea level, and the isotherms, therefore, relate to the average surface of the country occupied by our observers; such isotherms are controlled largely by the local topography, and should be drawn and studied in connection with a contour map.

The *regular diurnal period* in temperature is shown by the hourly means given in Table IV for all stations having self-registers.

As compared with the normal for June, the mean temperatures for the current month were in excess over the whole of the United States east of the Mississippi River, except in the east Gulf States. The greatest excesses were: Rockliffe, 6.4; Port Stanley, 6.2; Toronto, 5.9; Rochester, 5.6. They were deficient over the Rocky Mountain slope and plateau region, the greatest deficits were: Miles City, 6.4; Qu'Appelle, 5.9; Lander, 5.5; Bismarck, 5.2; Williston, 5.1.

Considered by districts, the mean temperatures for the current month show departures from normal temperatures as given in Table I. The greatest positive departure was: Lower Lake, 4.1. The greatest negative departure was: Northern slope, 4.4.

The *years of highest and lowest mean temperature* for June are shown in Table I of the REVIEW for June, 1894. The mean temperature for the current month was the highest on record at: Northfield, 66.2; Albany, 72.6; Rochester, 70.7; Buffalo, 68.8; Harrisburg, 73.4; Pittsburg, 74.7; Columbus, Ohio, 74.9; Sacramento, 72.9. It was the lowest on record at: St. Vincent, 58.2; Moorhead, 61.4; Miles City, 60.6; Helena, 56.6; Idaho Falls, 56.8; Lander, 56.3; Cheyenne, 56.8; Denver, 61.8; Pueblo, 66.2; El Paso, 77.5.

The *maximum and minimum temperatures* of the current month are given in Table I. The highest maxima were: Yuma and Fresno, 109 (23d); Red Bluff, 108 (23d); Tucson, 106 (26th). The lowest maxima were: Tatoosh Island, 71 (27th); Neah Bay, 74 (27th). The highest minima were: Port Eads, 75 (1st); Galveston, 72 (21st); Corpus Christi, 70 (6th); the lowest minima were: Baker City, 28 (15th); Idaho Falls, 28 (18th); Lander, 29 (18th); Carson City, 30 (18th).

The *years of highest maximum and lowest minimum temperatures* are given in the last four columns of Table I of the current REVIEW. During the present month the maximum temperatures were the highest on record at: Nantucket, 89; Woods Hole, 85; Buffalo, 93; Port Huron, 95; Detroit, 96; Grand Haven, 90; Columbus, Ohio, 99; Pittsburg, 98; Harrisburg, 97; Parkersburg, 99; Indianapolis, 100; Louisville, 100; Knoxville, 96; Cape Henry, 99; Hatteras, 91; Wilmington, 100; Columbia, S. C., 102; Titusville, 95; Concordia, 101; Wichita, 101; Port Angeles, 82. The minimum